

# **NFPA 805 NRC Pilot Observation Meeting Proposed Risk Impact Review Process**

**Bob Rishel**

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# Risk Impact Review Goals

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- Ensure deficiency is not red per NRC NFPA 805 enforcement discretion policy
- Obtain data to aid in prioritization of corrective actions
  - Modifications are being implemented for under the CLB that we know will also be needed and/or desirable under NFPA 805

Note: NRC NRR still reviewing PE enforcement discretion requests that were in our letter of intent

# Risk Impact Review - Enforcement Discretion Policy New Deficiencies

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- Enforcement discretion does not apply to the risk-significant issues, which under the Reactor Oversight Process would be evaluated as Red;
- Enforcement discretion does not apply to issues that would be categorized as Severity Level I;
- The licensee is required to adopt compensatory measures until compliance is either restored to 10 CFR 50.48(b) or achieved per 10 CFR 50.48(c)

# Risk Impact Review - Enforcement Discretion Policy Existing Deficiencies

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- The licensee has entered the noncompliance into its corrective action program and implemented appropriate compensatory measures,
- The noncompliance is not associated with a finding that the Reactor Oversight Process Significance Determination Process would evaluate as Red, or it would not be categorized at Severity Level I,
- The licensee submits a letter of intent by December 31, 2005, stating its intent to transition to 10 CFR 50.48(c).

# Risk Impact Review

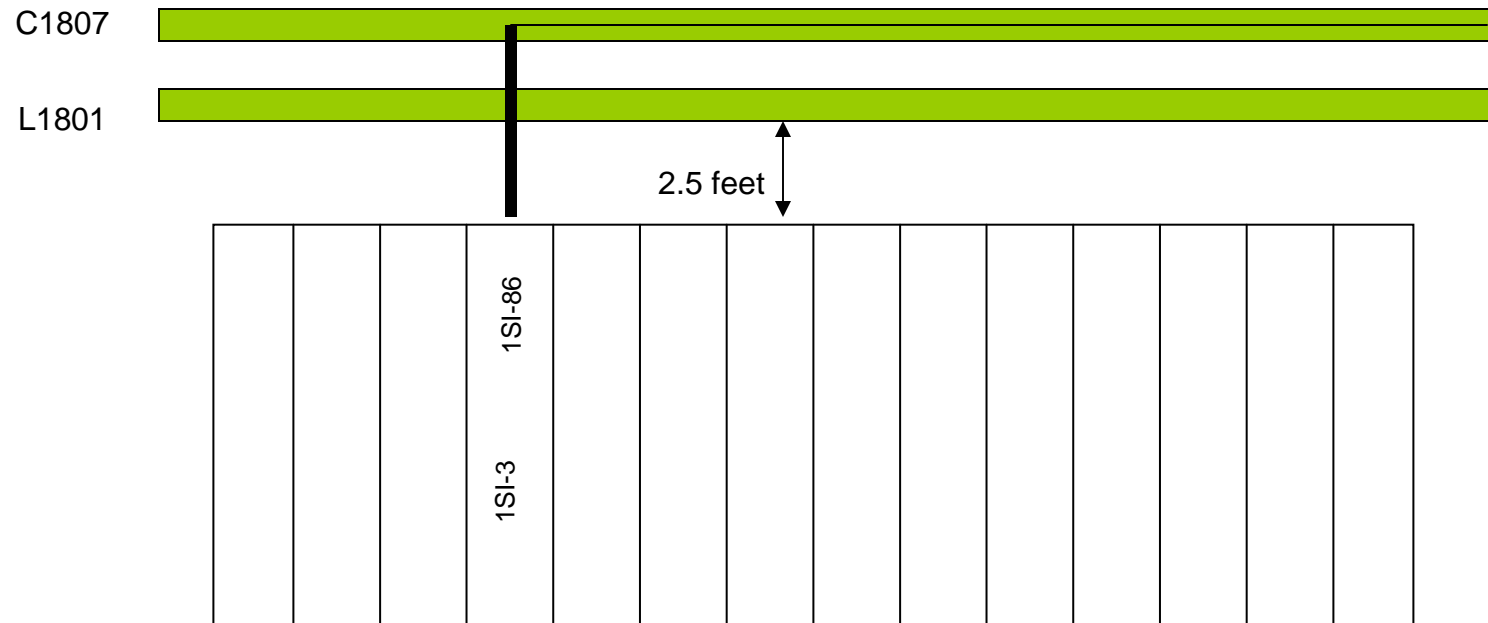
## PE High Level Philosophy

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- Deficiencies are reviewed together when they are realistically susceptible to the same fire scenario
  - Include all deficiencies identified as non routine
  - Routine items such as maintenance activities are excluded (e.g. door open for a day or degraded pen seals)
- All evaluated scenarios within the same Fire Area are added together to assess aggregate fire risk
- Process uses Fire SDP and/or NUREG 6850 as appropriate

# Risk Impact Review

## MCC Scenario Example



MCC

# Risk Impact Review – MCC Example

## 70 kW Fire – Fire Scenario

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- Fire in Cubicle 4

- ▶ Time to Damage < 1 Minute
- ▶ PNS = 1.0

- Fire Spread to Trays

- ▶ Plume temperature at L1801 – 674 F
- ▶ Time to ignite L1801 – 10 Minutes (SDP Attachment 7)
- ▶ Fire Spread to C1807 – 14 Minutes (SDP Attachment 3)
- ▶ PNS = 0.12 (SDP Attachment 8)

# Risk Impact Review – MCC Example

## 70 kW Fire – Risk Contribution

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- Two MOV's with CPT's Installed
- Possible Hot Short Failure Modes
  - Spurious Close (no impact)
  - Spurious Open (impact)
- Probability of Spurious Operation =  $(0.3/2) = 0.15$
- Requires both Valves =  $(0.15)(0.15) = 0.0225$
- Loss of Seal Cooling Requires Loss of CCW
- CCW Not in Fire Area
- Probability of Failure of Independent Train = 0.01
- Probability of RCP Seal LOCA = 0.2
- CCDP given failures occur =  $(0.2)(0.01)$
- CCDP given failures occur and spurious operation =  $4.5E-05$



# Risk Impact Review – MCC Example

## 70 kW Fire – CDF Contribution

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- Fire in MCC Cubicle

- ▶ FIF (1 cubicle):  $(5.5\text{E-}05)(0.9) = 4.95\text{E-}05$
- ▶ PNS = 1.0
- ▶ CCDP =  $4.5\text{E-}05$
- ▶ CDF =  $(4.95\text{E-}05)(1.0)(4.5\text{E-}05) = 2.23\text{E-}09$

- Fire Spread to Trays

- ▶ FIF (13 cubicles):  $(13)(5.5\text{E-}05)(0.9) = 6.44\text{E-}04$
- ▶ PNS = 0.12
- ▶ CCDP =  $4.5\text{E-}05$
- ▶ CDF =  $(6.44\text{E-}04)(0.12)(4.5\text{E-}05) = 3.47\text{E-}09$

# Risk Impact Review – MCC Example

## 200 kW Fire – Fire Scenario

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- Fire in Cubicle 4
  - Time to Damage < 1 Minute
  - PNS = 1.0
- Same as 70 kW
- Fire Spread to Trays
  - Plume temperature at L1801 – >1900 F
  - Time to ignite L1801 – 1 Minute (SDP Attachment 7)
  - Fire Spread to C1807 – 5 Minutes (SDP Attachment 9)
  - PNS = 0.56 (SDP Attachment 8)

# Risk Impact Review – MCC Example

## 200 kW Fire – Risk Contribution

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- Same as 70 kW Fire

# Risk Impact Review – MCC Example

## 200 kW Fire – CDF Contribution

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- Fire in MCC Cubicle

- ▶ FIF (1 cubicle):  $(5.5E-05)(0.1) = 5.5E-06$
- ▶ PNS = 1.0
- ▶ CCDP =  $4.5E-05$
- ▶ CDF =  $(5.5E-06)(1.0)(4.5E-05) = 2.48E-10$

- Fire Spread to Trays

- ▶ FIF (13 cubicles):  $(13)(5.5E-05)(0.1) = 7.15E-05$
- ▶ PNS = 0.56
- ▶ CCDP =  $4.5E-05$
- ▶ CDF =  $(7.15E-05)(0.56)(4.5E-05) = 1.8E-09$

# Risk Impact Review – MCC Example

## High Energy Arcing Fault

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- Similar to 200 kW fire
  - Based on the fact that SDP assumes that upstream breaker trips for the HEAF, only inter-cable shorts are considered.
  - CCDF =  $4.5\text{E-}07$
  - CDF =  $2.97\text{E-}011$

# Risk Impact Review – MCC Example

## CDF for MCC-1B31-SB

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- $2.23\text{E-}09 + 3.47\text{E-}09 + 2.48\text{E-}10 + 1.8\text{E-}09 + 2.97\text{E-}011 = \mathbf{7.78\text{E-}09}$
- Same Circuits Pass over MCC-1B34-SB (3 cubicles)
- CDF Impact for 1B34 fire spreading to trays:  $1.85\text{E-}09$
- Total CDF for Fire Area 1-BAL-C =  $\mathbf{9.63\text{E-}09}$

# Risk Impact Review

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- Review HNP Draft Calculation
- **Hand outs are proprietary due to plant specific information – need to be returned at end of session**